

10/539450

Figure 1

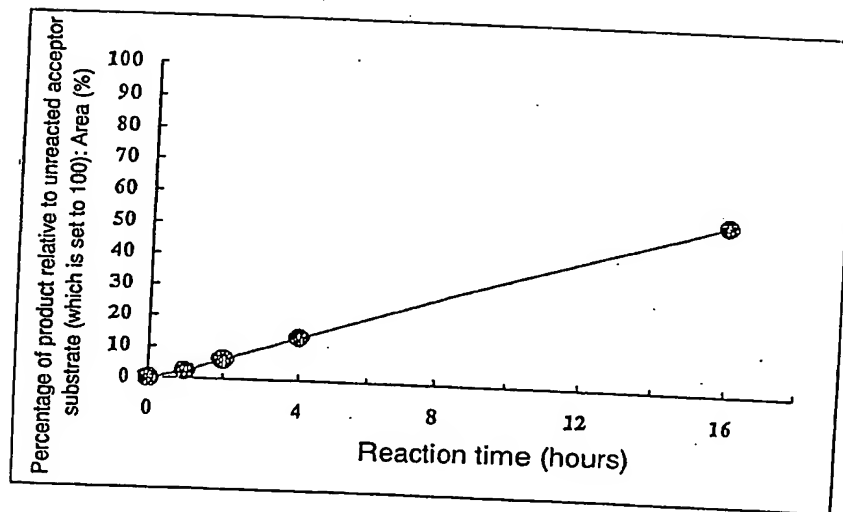


Figure 2A

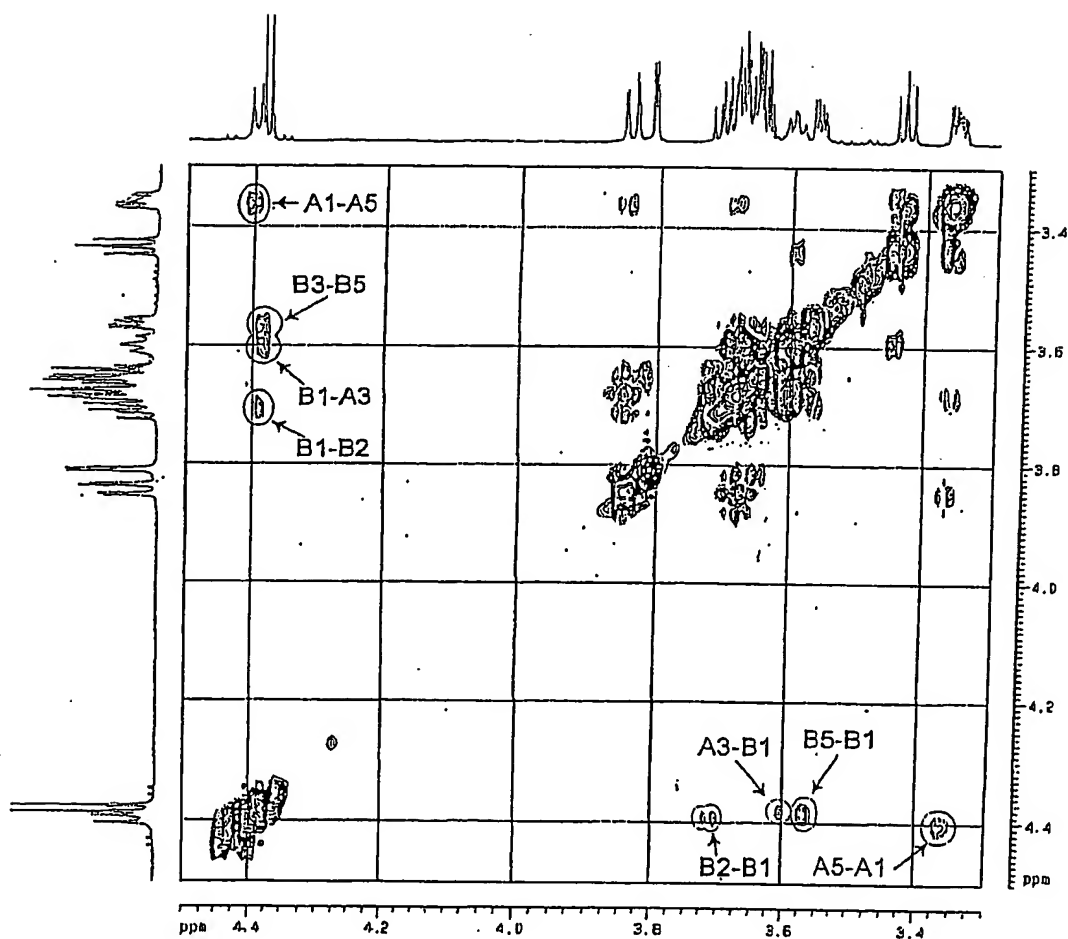


Figure 2A (continued)

G34, noesyprtp, 0.9s, 298K, 03-01-09

```

Current Data Parameters
NAME          G34
EXPNO         9
PROCNO        1

F2 - Acquisition Parameters
Date_         20021228
Time          12.12
INSTRUM       dmx750
PROBHD        5 mm 1H XYZ-
PULPROG       noesyprtp
TD            2048
SOLVENT       D2O
NS            16
DS            16
SWH           6009.615 Hz
FIDRES        2.934382 Hz
AG            0.1704436 sec
RG            2048
DW            83.200 usec
DE            4.50 usec
TE            300.0 K
d0            0.00000300 sec
D1            1.39999998 sec
D8            0.89999998 sec
d11           0.03000000 sec
d12           0.00002000 sec
d13           0.00000300 sec
INO           0.00008331 sec

```

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***** CHANNEL f1 *****
NUC1          1H
P1            8.65 usec
PL1           1.00 dB
PL9           75.00 dB
SF01          750.1335265 MHz

```

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F1 - Acquisition parameters
ND0           2
TD            512
SF01          750.1335 MHz
FIDRES        11.721681 Hz
SW            8.001 ppm

```

```

F2 - Processing parameters
SI            1024
SF            750.1299973 MHz
WOW           QSINE
SSB           2
LB            0.00 Hz
GB            0
PC            1.00

```

```

F1 - Processing parameters
SI            1024
WC2           TPPI
SF            750.1299974 MHz
WOW           QSINE
SSB           2
LB            0.00 Hz
GB            0

```

```

2D NMR plot parameters
CX2           15.00 cm
CX1           15.00 cm
F2PLO         4.500 ppm
F2LO          3375.58 Hz
F2PHI         3.300 ppm
F2HI          2475.43 Hz
F1PLO         4.500 ppm
F1LO          3375.58 Hz
F1PHI         3.300 ppm
F1HI          2475.43 Hz
F2PPNCN       0.08000 ppm/cm
F2HZCN        60.01040 Hz/cm
F1PPNCN       0.08000 ppm/cm
F1HZCN        30.01040 Hz/cm

```

Figure 2B

NOESY mixing time 900ms

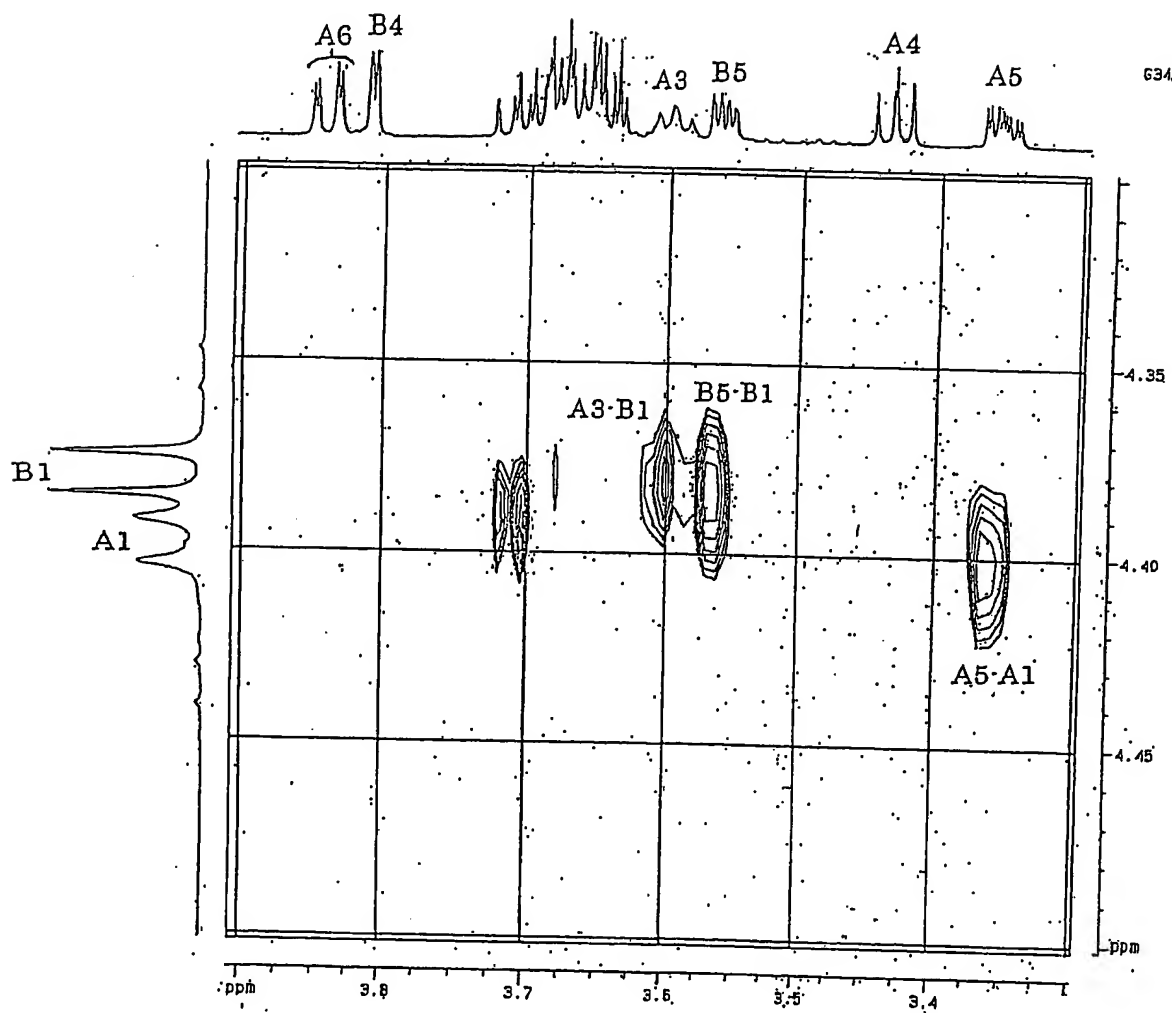


Figure 2B (continued)

G34, noesyprtp, 0.9s, 298K, 03-01-09

```

Current Data Parameters
NAME          G34
EXPNO         9
PROCNO        1

F2 - Acquisition Parameters
Date_         20021228
Time          12.12
INSTRUM       dmx750
PROBHD        5 mm 1H XYZ-
PULPROG       noesyprtp
TD            2048
SOLVENT       D2O
NS            16
DS            16
SWH           6009.615 Hz
FIDRES        2.934382 Hz
AQ            0.1704436 sec
RG            2048
DW            83.200 usec
DE            4.50 usec
TE            300.0 K
d0            0.00000300 sec
d1            1.39999998 sec
d8            0.89999998 sec
d11           0.03000000 sec
d12           0.00002000 sec
d13           0.00000300 sec
INO           0.00008331 sec

***** CHANNEL f1 *****
NUC1          1H
P1            8.65 usec
PL1           1.00 dB
PL9           75.00 dB
SF01          750.1335265 MHz

F1 - Acquisition parameters
ND0           2
TD            512
SF01          750.1335 MHz
FIDRES        11.721681 Hz
SW            8.001 ppm

F2 - Processing parameters
SI            1024
SF            750.1299973 MHz
WOW           QSINE
SSB           2
LB            0.00 Hz
GB            0
PC            1.00

F1 - Processing parameters
SI            1024
WC2           TPP1
SF            750.1299974 MHz
WOW           QSINE
SSB           2
LB            0.00 Hz
GB            0

2D NMR plot parameters
CX2           15.00 cm
CX1           15.00 cm
F2PLO        8.907 ppm
F2LO         2930.51 Hz
F2PHI        3.296 ppm
F2HI         2472.75 Hz
F1PLO        4.501 ppm
F1LO         3376.70 Hz
F1PHI        4.298 ppm
F1HI         3224.32 Hz
F2PPNCN      0.04068 ppm/cm
F2HZCN       30.51759 Hz/cm
F1PPNCN      0.01354 ppm/cm
F1HZCN       10.15880 Hz/cm

```

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Figure 3

Table 1

<sup>1</sup> H Chemical shift	A (ppm)	B (ppm)
δ1	4.398*	4.381*
δ2	3.687	3.711*
δ3	3.599*	3.655
δ4	3.435*	3.811*
δ5	3.358*	3.562*
δ6	3.681	3.645
δ6	3.844*	3.698
δCH <sub>3</sub>	1.828*	1.892*

Table 2

Coupling coefficient	A (Hz)	B (Hz)
J12	8.4	8.4
J23	9.8	10.6
J34	8.6	5.9
J45	9.2	3.3?
J56a	5.8	5.5
J56b	2.2	4.0
J6a6b	12.4	12.1

Figure 4

Table 3

f2	Signal	f1	Signal	300 ms	600 ms	900 ms
7.265	phenyl	1.828	CH <sub>3</sub>	-	w	w
7.265	phenyl	4.557	CH <sub>2</sub> (high)	w	m	m
7.265	phenyl	4.778	CH <sub>2</sub> (low)	w	m	m
7.265	phenyl	4.398	A1	-	-	m
4.557	CH <sub>2</sub>	4.398	A1	-	w	m
4.398	A1	4.557	CH <sub>2</sub>	-	w	w
4.398	A1	3.358	A5	-	m	m
4.381	B1	3.599	A3	-	w	m
4.381	B1	3.562	B5	-	m	m
3.599	A3	4.381	B1	-	w	m
3.562	B5	4.381	B1	-	m	s
3.358	A5	4.398	A1	-	m	m

Figure 5

B3Gal-T1 1: FLVILISTTHKEFDARQAI RETWGDENNFKG1K-IA-T-IFLLG---KNAD--PVL---- 48  
 B3Gal-T2 1: FLILLIAEPGQIEARRAI RQTWGNESLAPG1Q-IT-R-IFLLGLSIKLN---GYL---- 50  
 B3Gal-T3 1: FLVILVTSHPSDVKAQAI RVTWGEKKSWWGYE-VL-T-IFLLGQEAEEKD---KML---- 51  
 B3Gal-T5 1: FLVLLVTSSHKQLAHRMAIRQTWGERMVKGKQ-LK-T-IFLLGTTSSAAE--T----- 49  
 B3Gal-T6 1: FLAVLVASAPRAAEHRSVIRSTWLARRGAPGD--VWAR--FAVGTAGLGAE--ER----- 49  
 G34 1: DVVVGVL SARNNHELNRVIRSTWMRHLLQHPTLSQRVLVKFIIGAHCCEVPVEDREDPYS 60  
 \* \* \* \* \* M1 \* \*  
 B3Gal-T1 49: -N----- 49  
 B3Gal-T2 51: -Q----- 51  
 B3Gal-T3 52: -A----- 52  
 B3Gal-T5 50: ----- 50  
 B3Gal-T6 50: ----- 50  
 G34 61: CKLLNITNPVLNQEI EAFSLSEDTSSGLPEDRVVSVSFRVLYPIVITSLGVFYDANDVGF 120  
 B3Gal-T1 50: ----- 50  
 B3Gal-T2 52: ----- 52  
 B3Gal-T3 53: ----- 53  
 B3Gal-T5 50: ----- 50  
 B3Gal-T6 50: ----- 50  
 G34 121: QRNITVKLYQAEQEALFIARFSPSCGVQVKNLWYKPVEQF ILPESFEGTIVWESQDLH 180  
 B3Gal-T1 50: ----- 50  
 B3Gal-T2 52: ----- 52  
 B3Gal-T3 53: ----- 53  
 B3Gal-T5 50: ----- 50  
 B3Gal-T6 50: ----- 50  
 G34 181: GLVSRNLHKVTVNDGGGVL RVITAGEGALPHEFLEGVEGVAGGFIYTIQEGDALLHNLHS 240  
 B3Gal-T1 50: -----QMVEQESQIFHDIIVE-DFIDSYHNLTLKTLMGMRWVATFCSKA 92  
 B3Gal-T2 52: -----RAILEESRQYHDI IQQ-EYLDITYNLTIKTLMGMNWWATYCPHI 94  
 B3Gal-T3 53: -----LSLEDEHLLYGDIIRO-DFLDITYNLTIKTLMAFRWVTEFCPNA 95  
 B3Gal-T5 50: -----KEVDQESQRHGDIIQK-DFLDVYYNLTIKTMMGIEWVHRFCPOA 92  
 B3Gal-T6 50: -----RALEREQARHGDL LLLPALRDAYENLTAKVLA MLAWLDEHVAF- 92  
 G34 241: RPQRLIDHIRNLHEEDALLKEESSIYDDIVFV-DVVDYTRNVPKLLNFYRWVETTSFN 299  
 \* \* \* \* \* M2 \* \* \* \* \*  
 B3Gal-T1 93: KYVMKTDSDIFVNMNLIYKLLKPSTKPRRRYFTGYVINGG--P-IRDVRSKWYMPRDL 148  
 B3Gal-T2 95: FYVMKTDSDMFVNTYELJNKLLKPDLPFRHNYFTGYLMRGYA--P-NRNKDSKWYMPDL 151  
 B3Gal-T3 96: KYVMKTDTDVFINVTGNLVKYLNLNHSEKF--FTGYPLIDNY--S-YRGFYQKTHISYQE 150  
 B3Gal-T5 93: AFVMKTDSDMFINVVDYLTLLKKNRTTRF--FTGFLKLNFE--P-IRQPFKWFVSKSE 147  
 B3Gal-T6 93: EFVLKADDDSFARLDALLAELRAREPARRRRLYWGFFSGRGRVKPGGRWREAAWQLCD-- 150  
 G34 300: LLLKTDDDCYIDLEAVFNRIQKNLDGPNF-WWGNFRLNWAV--DRT--GKWQEL--E 350  
 \* \* \* \* \*  
 B3Gal-T1 149: YPDSNYPFF-CSGTGYIFSADVAELIYKTSLHTRLLHLEDVYVGLCLRKLG1HPFQON-SG 206  
 B3Gal-T2 152: YPSERYPVF-CSGTGYVFSGLAEIKFVSLGIRRLHLEDVYVGLCLAKLRIDPVPPPNE 210  
 B3Gal-T3 151: YPFKYVPPY-CSGLGYIMSRDLVPRIYEMMGHVKPIKFEDVYVGLCLNLLKVN1HIPEDT 209  
 B3Gal-T5 148: YPWDRYPPF-CSGTGYVFSGDVASQVYNVSKSVPIKLEDVYVGLCLERLNRLEELHSQ 206  
 B3Gal-T6 151: YYL---PYAL--GGGYVLSADLVHYLRSLRDYLRWHSEDVSLGAWLA--PVDVQREHD- 202  
 G34 351: YPSPAYPAFAC-GSGYVISKDIVKWLASNSGRKTYQGEDVSMGIYMAAIGPKRYQD-SL 408  
 \* \* \* \* \* M3 \* \* \* \* \*  
 B3Gal-T1 207: --FNNHWMAYSLCRYRRVITVHQISPEEMHRIWNMSSSKHLRC----- 248  
 B3Gal-T2 211: FVFNHWRVSYSSCKYSHLITSHQFQPSSELIKYNHLOQNKHNACANA AKEA----- 262  
 B3Gal-T3 210: NLFFLYRIHLDVQCRLRRVIAAHGFSSKEIITFWQVMLRN--TTCHY----- 253  
 B3Gal-T5 207: PTFPPGGLRFSVCLFRRI VACHFIKPRTLDDYWQALENSRGEDCP-PV----- 253  
 B3Gal-T6 203: PRFDTE-YRSRGCSNOYL VTHKQ-SLEDMLEKHATL-AREGRCLKREVQLRLSYVYDWSA 259  
 G34 409: -----WLC-EKTCETGMLSSP-QYSPWELTELWK-LKERCGDPC-RC-QAR----- 449  
 \* \* \* \* \*  
 B3Gal-T1 249: ----- 249  
 B3Gal-T2 263: -----GRYRHRKLH- 271  
 B3Gal-T3 254: ----- 254  
 B3Gal-T5 254: ----- 254  
 B3Gal-T6 260: PPSQCCQR-REG1P 272  
 G34 450: ----- 450



Figure 6

M 1

b3GnT2	FLLLAIKSLTPHFARRQAIRESWQES-NAGNQT---VVRVFLLGQTPPEDNHP-DLSDM
b3GnT3	FLLLVIKSSPSNYVRRELLRRTWGRER-KVRGLQ---LRLFLVGTASNPHEAR-KVNRL
b3GnT4	FLLLAIKSQPGHVERRAAIRSTWGRVGGWARGRQ---LKLVLFLGVAG---SA-PPAQL
b3GnT5	LLLLFVKTAPENYDRRSIGIRRTWGNEN-YVRSQLNANIKTLFALGTPNPLE-GE-ELQRK
b3Gal-T6	FLAVLVASAPRAVERRTAVRSTWLAPE-RRGGPED--VWARFAVGTGGGGS---EERRA
hGal-T1	FLVILISTTHKEFDARQAIRETWGNEN-NFKGIK---IATLFLGKNADP---VLNQM
hGal-T2	FLILLIAAEPGQIEARRAIRQTWGNES-LAPGIQ---ITRIFLLGLSIKLN--G-YLQRA
hGal-T3	FLVILVTSHPSDVKARCAIRVTWGEKK-SHWGYE---VLTFFLLGQAEKE-DK-MLALS
hGal-T4	FLLLLVCTAPENLNQRNAIRASWGLR-EARGLR---VQTLFLLGEPNAQHPVWGSQSGSD
hGal-T5	FLVLLVTSSHKQLAERMAIRQTWGER-MVKGKQ---LKTFFLLGTTSSA---AETKE
* . . . . *	

M 2

b3GnT2	LKFESEKHQDILMW-NYRDTFFNLSLKEVFLRWVSTSCPDTFFYFKGDDVFVNTHHIL
b3GnT3	LELEAQTHGDILQW-DFHDSFFNLTLKQVFLQWQETRCANASFVLNGDDVFAHTDNMV
b3GnT4	LAYESREFDDILQW-DFTEDFNLTLKELHLQRWVVAACPAHFMLKGDDVFVHVPNVL
b3GnT5	LAWEDQRYNDIIQQ-DFVDSFYNLTLLMQFSWANTYCPHANFLMTADDDIFIHMPNLI
b3Gal-T6	LELEQAQHGDLILLPALRDAYENLTAKVLAMLTWLDER-VDFEVLKADDDSFARLDAIL
hGal-T1	VEQESQIFHDIIVE-DFIDSYHNLTLLTLMGMRWVATFCSKANYMKTDSDFVNMDNLI
hGal-T2	ILEESRQYHDIQQ-EYLDITYNLTIKTLMGMWVATYCPHANYMKTDSDFVNTYELI
hGal-T3	LEDEHLLYGDIIRQ-DFLDITYNLTLLKTIMAFRWVTEFCPNAHYVMKTDDYFINTGNLV
hGal-T4	LASESAAQGDILQA-AFQDSYRNLTLLKTLGLNWAKEHCPMARYVLKTDDYVNVPELV
hGal-T5	VQDESQRHGDIQK-DFLDVYNYLTLLKTMGIEWVHRFCPQAAEVMKTDSDFINVDYLT
* . . . . *	

M 3

b3GnT2	NYLNS-----LSKTKAKDLFIGDVIHNAGPHRDKKLKYYI
b3GnT3	FYLDQ-----HDP--GRHLFVGQLIQNVGPIRAFWSKYYV
b3GnT4	EFLDG-----WDP--AQDLLVGDVIRQALPNRNTKVYFI
b3GnT5	EYLS-----LEQIGVQDFWIGRVHRGAPPIRDKSSKYYV
b3Gal-T6	VDLRA-----REPARRRRLYWGFFSGR--GRVKPGGRWRE
hGal-T1	YKLLK-----PSTKPRRYFTGYVING-GPIRDVRSKWYM
hGal-T2	NKLLK-----PDLPPRHNYFTGYLMRGYAPNRNKDSKWYM
hGal-T3	KYLLN-----LNH--SEKFFTGYPLIDNYSYRGFYQKTHI
hGal-T4	SELVLRGGRWGQWERSTEPQREAEQEGGVHSEEVPLLYLGRVHWRVNPSTRPGGRHRV
hGal-T5	ELLLK-----KNR--TTRFFTGLKLNEFPRIQPFKSWFV
* . . . . *	

M 3

b3GnT2	PEVVYSG---LYPPYAGGGGFLYSGHIALRLYHITDQVH-LYPIDDVYTGMLQKLGVLV
b3GnT3	PEVVTQNE--RYPPYCGGGGFLSRFTAALRRAHVLD-IFPIDDVFLGMLGLEGLKP
b3GnT4	PPSMYRAT--HYPPYAGGGGYMSRATVRRLOAIMEDAE-LFPIDDVFGMLRRLGLSP
b3GnT5	SYEMYQWP--AYPDYTAGAAYVISGDVAAKVYEASQTLNSSLYDDVFMGLANKIGIVP
b3Gal-T6	AAWQLCb---YYLPYALGGGYLSADLVHYLRLSREYLR-AWHSEPVSLGTWAPVDVQR
hGal-T1	PRDLYPDS--NYPPFCSGTGYIFSADVAELIYKTSLHTR-LLHLEDVYVGLRLKLGHP
hGal-T2	PPDLYPSE--RYPVFCSGTGYVFSGLDAEKIFKVSIGIR-RLHLEDVYVGLAKLRIDP
hGal-T3	SYQEYPFK--VFPPYCSGLGYMSRDLVPRIYEMMGHVK-PIKFEDVYVGLNLLKVNI
hGal-T4	SEEQWPHTWGPPPYASGTGYLSASAVQLIKVASRAP-LLLEDVYVGVSAARRGGLAP
hGal-T5	SKSEYPWD--RYPPFCSGTGYVFSGDVASQYVNVSKSVP-YIKLEDVYVGLERLNIRL
* . . . . *	

b3GnT2	EKHKGFRFTDIE----EKNKNNICSYVDLMLVHSRKPQEMIDIWSQLQSA-----
b3GnT3	ASHSGIRTSQVRAPSQHLSSEDFPCFYRDLLVHRFLPYEMLMWDALNQP-----
b3GnT4	MHHAGFKTFGIRR---PLDPLDPCLYRGLLLVHRLSPLEMWMTWALVTDE-----
b3GnT5	QDHVFFS--GEGK-----TPYHPCIEKMMTSHG-HLEDQLWKNATDPKVKTKSGFF
b3Gal-T6	EHDPRFD--TEYK-----SRGCNNQYLVTBKQ-SPEDMLEKQMLLHEG-----

Note: "b3" represents a  $\beta$ 1,3 linkage and "Gn" represents GlcNAc.

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Figure 7

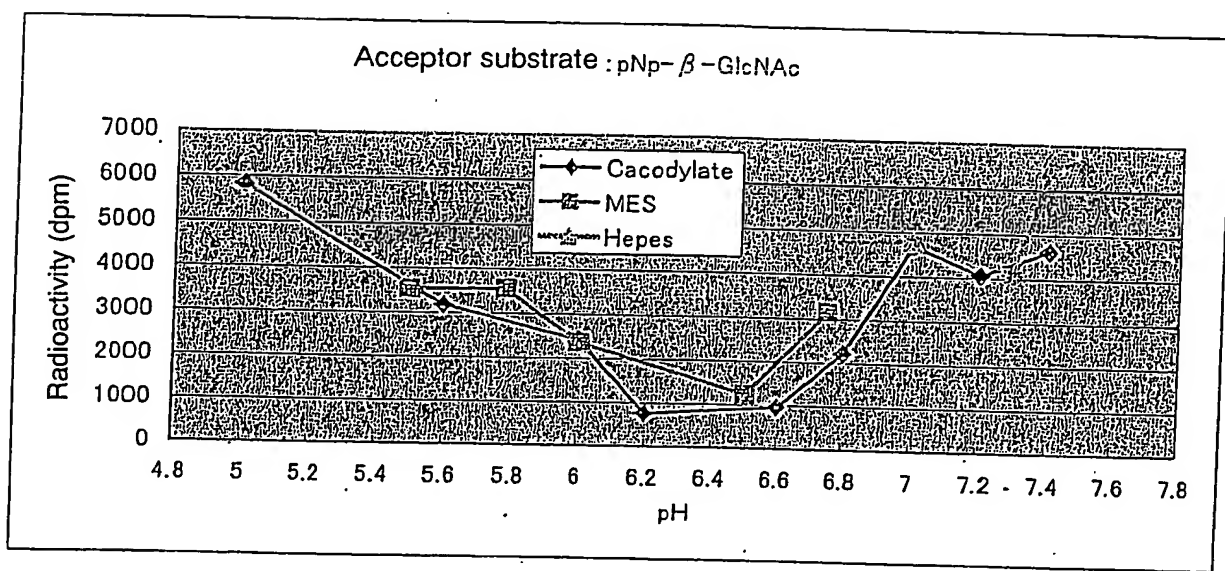
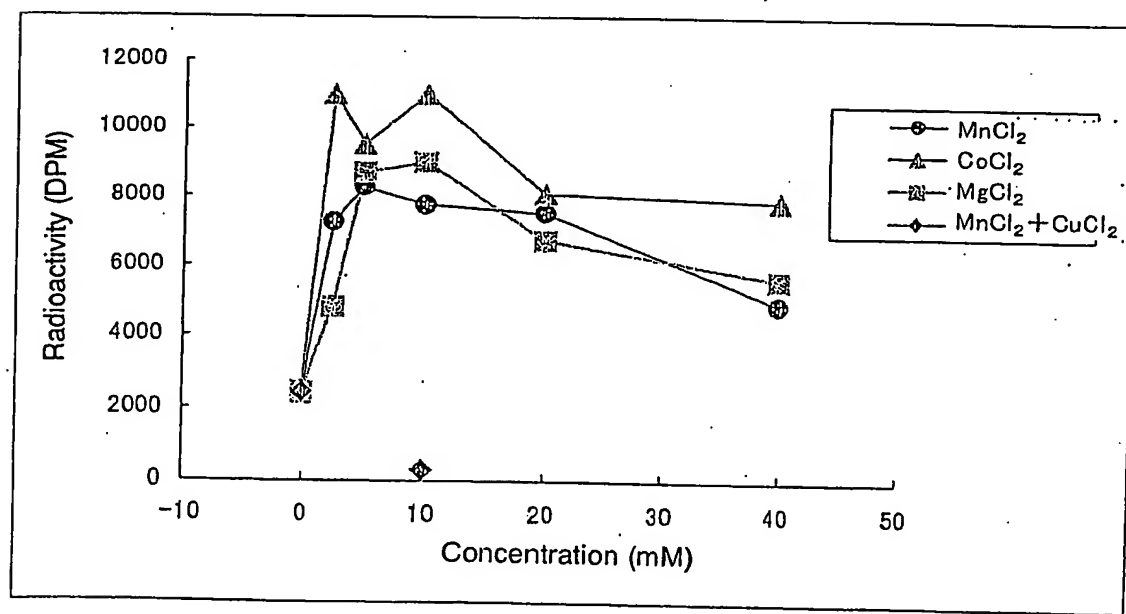


Figure 8



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Figure 9

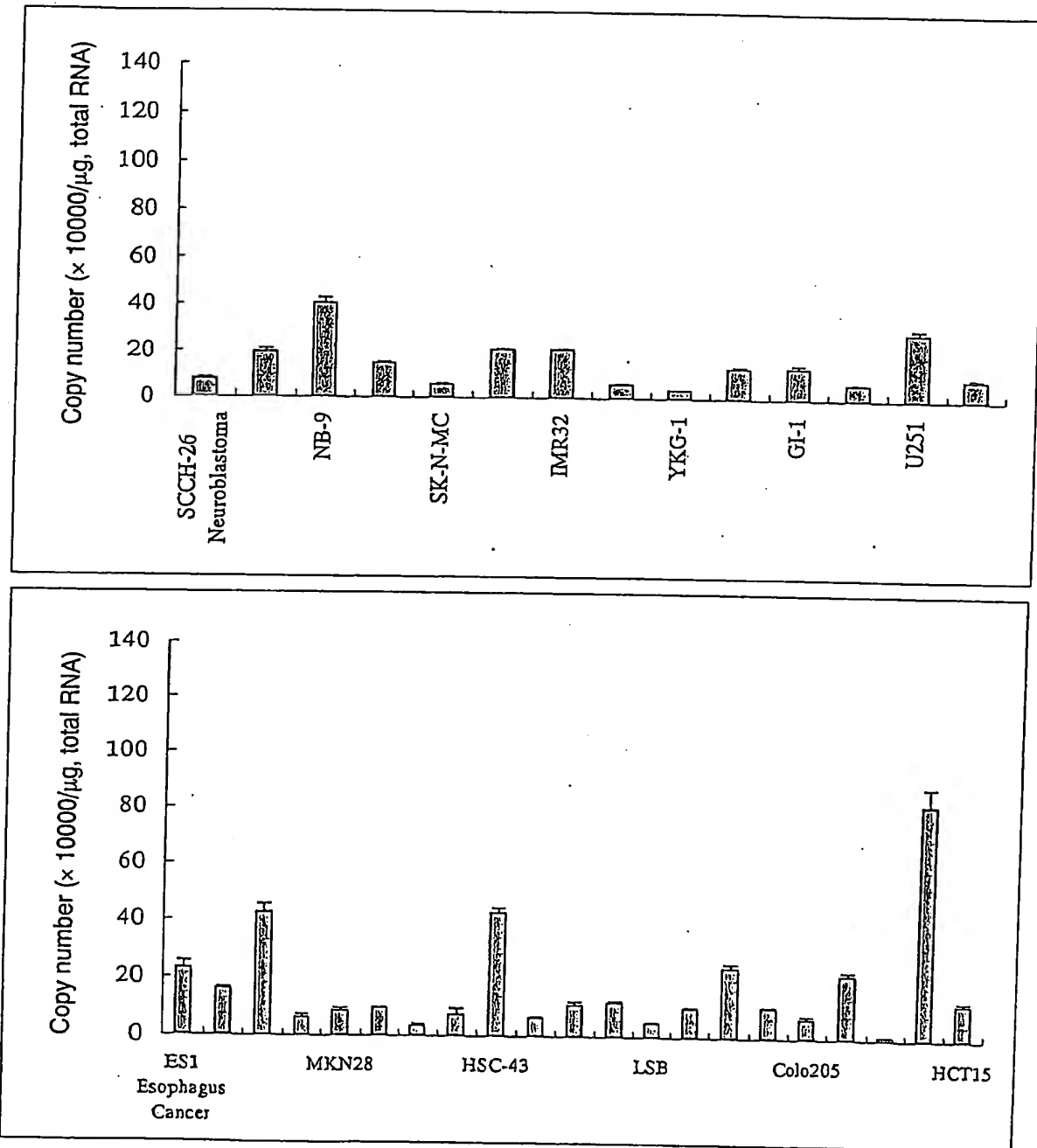


Figure 9 (continued)

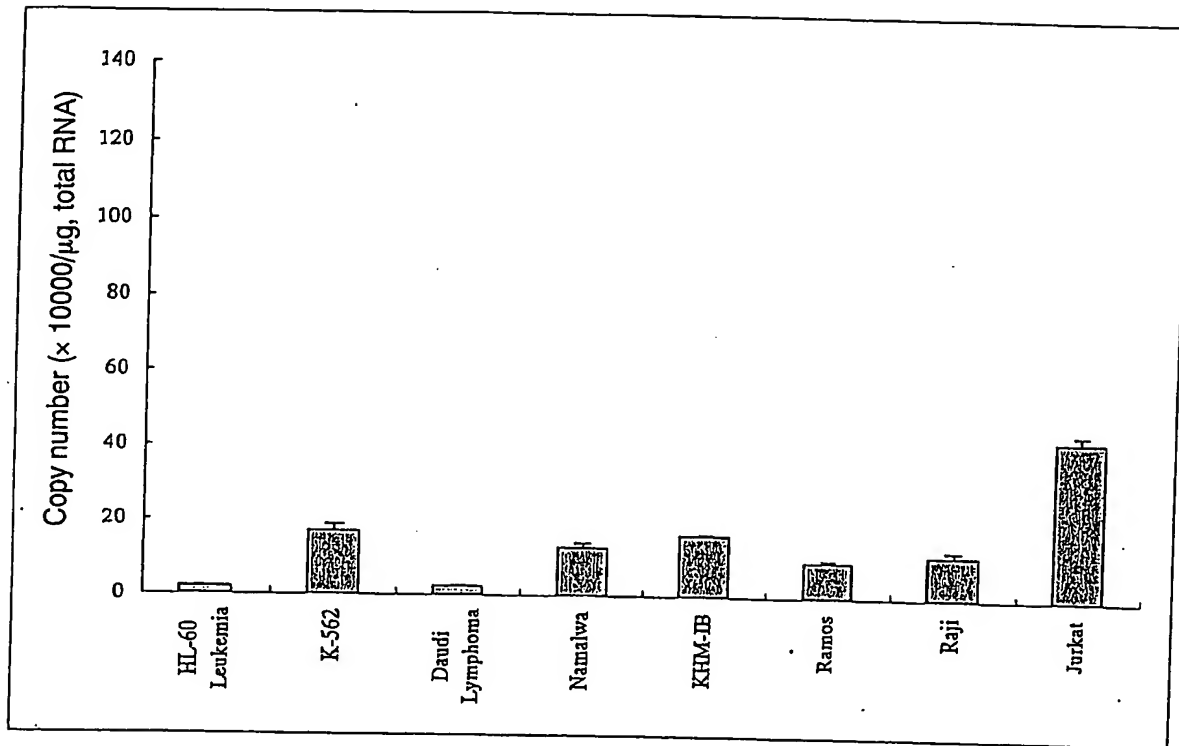


Figure 9 (continued)

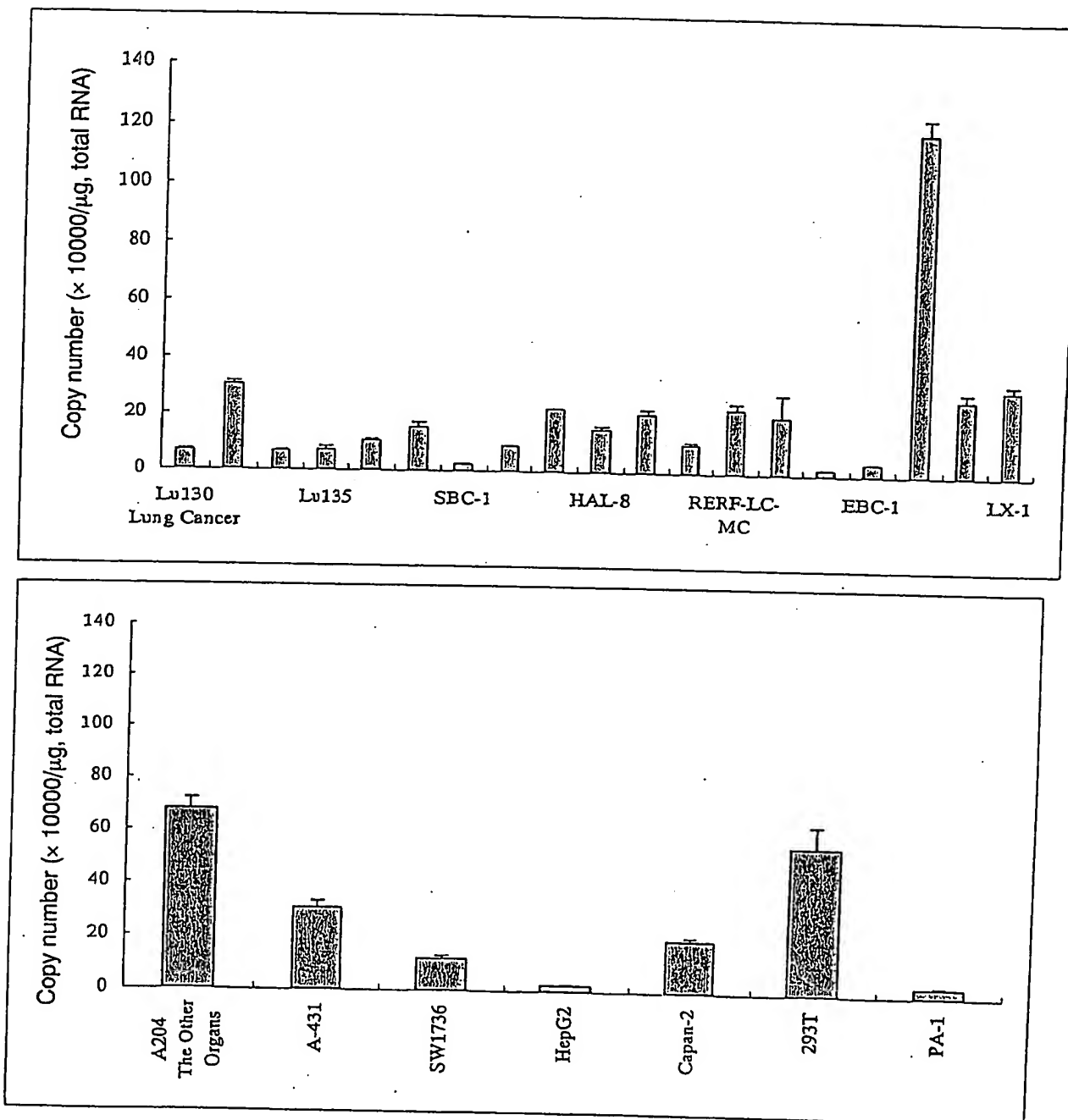


Figure 9 (continued)

	Cell Line	Copy number (x 10000 /μg, total RNA)	
Neuroblastoma	SCCH-26	7.87	0.59
	NAGAI	19.53	1.45
	NB-9	40.56	2.34
	SK-N-SH	14.93	0.74
	SK-N-MC	5.79	0.47
	NB-1	20.90	0.54
	IMR32	21.03	0.25
Glioblastoma	T98G	6.20	0.24
	YKG-1	3.85	0.05
	A172	13.38	0.87
	GI-1	13.72	1.25
	U118MG	6.80	0.51
	U251	28.90	1.89
Lung Cancer	KG-1-C	9.09	0.55
	Lu130	6.80	0.42
	Lu134A	30.31	1.16
	Lu134B	6.76	0.40
	Lu135	7.16	1.32
	Lu139	10.66	0.50
	Lu140	15.36	1.83
	SBC-1	2.46	0.22
	PC-7	9.08	0.20
	PC-9	22.42	0.11
	HAL-8	15.18	1.22
	HAL-24	20.80	1.71
	ABC-1	10.27	0.87
	RERF-LC-MC	22.85	2.15
	EHHA-9	20.34	7.88
	PC-1	2.13	0.18
	EBC-1	4.41	0.19
	PC-10	118.76	4.89
	A549	27.10	2.63
	LX-1	30.72	2.06
Esophagus Cancer	ES1	23.03	2.53
	ES2	16.07	0.65
	ES6	42.76	2.96
Gastric Cancer	MKN1	6.20	1.10
	MKN28	8.56	0.99
	MKN7	9.71	0.10
	MKN74	3.46	0.81
	MKN-45	7.32	2.13
	HSC-43	42.82	1.67
	KATOIII	6.37	0.37
	TMK-1	10.78	1.19
Colorectal Cancer	LSC	11.76	0.57
	LSB	4.89	0.30
	SW480	10.05	0.43
	SW1116	24.09	1.39
	Colo201	10.40	0.41
	Colo205	6.80	0.88
	C1	21.86	1.20
	WiDr	1.24	0.04
	HCT8	82.17	6.24
	HCT15	12.14	0.96
The Other Organs	A204	67.94	4.37
	A-431	30.59	2.52
	SW1736	11.92	1.13
	HepG2	2.27	0.35
	Capan-2	19.43	1.24
	293T	55.14	8.29
	PA-1	3.52	0.56
Leukemia	HL-60	2.08	0.11
	K-562	17.08	1.77
Lymphoma	Daudi	2.41	0.20
	Namalwa	13.00	1.20
	KHM-IB	16.35	0.45
	Ramos	9.54	0.75
	Raji	11.56	1.31
	Jurkat	42.71	1.93
	YKN45	10.12	0.56

Figure 10

```

mouse G34 1' MRNWLVLCP CVLGAALHLW HLWLRSPDP HNTGPSAADQ SALFPHWKFS HYDVVVGVL
*****
human G34 1" MRNWLVLCP CVLGAALHLW -LRLRSPPPA CASGAGPADQ LALFPQWKST HYDVVVGVL
61' ARNNHELNV IRNTWLKNLL HHPTLSQRL VKFIIGARGC EVFVEDREDP YSCLLNITN
*****
60" ARNNHELNV IRSTWMRHLL QHPTLSQRL VKFIIGARGC EVFVEDREDP YSCLLNITN
121' PVLNQIEAF SFPDASSR LSEDRVSVS FRVLYPIVIT SLGVFYDASD VGFQRNITVK
*****
120" PVLNQIEAF SLSEDTS5G- LPEDRVSVS FRVLYPIVIT SLGVFYDAND VGFQRNITVK
181' LYQTEQEEAL FIARFSPSC GVQVKNLWYK PVEQFILPES FEQTIVWESQ DLHGLVSRNL
*****
179" LYQAEQEEAL FIARFSPSC GVQVKNLWYK PVEQFILPES FEQTIVWESQ DLHGLVSRNL
241' HRVTVNDGGG VLRVLAAGEG ALPHEFMEGV EGVAGGFIYT VQEGDALLRS LYSRQRLAD
*****
239" HKVTVNDGGG VLRVITAGEG ALPHEFLEGV EGVAGGFIYT IQEGDALLHN LHSRQRLID
301' HIQDLQVEDA LLQEESVHD DIVFVDVVDT YRNVPKLLN FYRWTVESTS FDLLLKTDDD
*****
299" HIRNLHEEDA LLKEESSIYD DIVFVDVVDT YRNVEAKLLN FYRWTVETTS FNLLLKTDDD
361' CYIDLEAVFN RIAQKNLDGP NFWWGNFRLN WAVDRTGKWQ ELEYPSPAYP AFACGSGYVI
*****
359" CYIDLEAVFN RIVQKNLDGP NFWWGNFRLN WAVDRTGKWQ ELEYPSPAYP AFACGSGYVI
421' SKDIVDWLAG NSRRLKTYQG EDVSMGIWMA AIGPKRHQDS LWLCEKTCET GMLSSPOYSP
*****
419" SKDIVKWLAS NSGRLKTYQG EDVSMGIWMA AIGPKRYQDS LWLCEKTCET GMLSSPOYSP
481' EELSKLWELK ELCGDPCQCE AKVR
*****
479" WELTELWKLK ERCGDPCRCQ AR

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Figure 11

